Mrs. Hayden

NAME Key **Date**

Identify the conic and put it into graphing/standard form. Then find all relevant parts (center, vertices, foci, directrix, a, b, c, radius, endpoints of the latus rectum, slopes of the asymptotes) and graph #s 3- 8.

Hyperbola 1. $x^2 - 4y^2 - 2x - 24y - 39 = 0$

$x^2 - 2x + 1 - 4y^2 - 24y = 39 + 1 - 36$

$-4(y^2 + 6y + 9)$

$(x-1)^2 - 4(y+3)^2 = 4$

$\boxed{\frac{(x+1)^2}{4} - \frac{(y+3)^2}{1} = 1}$

C(1,-3)
a=2
b=1
$c=\sqrt{5}$

asymptotes $y+3 = \pm\frac{1}{2}(x-1)$

V(3,-3)(-1,-3)
$F(1\pm\sqrt{5}, -3)$

Ellipse 2. $x^2 + 9y^2 + 2x - 18y + 1 = 0$

$x^2 + 2x + 1 + 9(y^2 - 2y + 1) = -1 + 1 + 9$

$(x+1)^2 + 9(y-1)^2 = 9$

$\boxed{\frac{(x+1)^2}{9} + \frac{(y-1)^2}{1} = 1}$

$a=3$ $b=1$ $c=2\sqrt{2}$

C(-1,1)
$F(-1\pm 2\sqrt{2}, 1)$
V(2,1)(-4,1)

3. $x^2 + y^2 - 6x - 16y + 57 = 0$

circle

$x^2 - 6x + 9 + y^2 - 16y + 64 = -57 + 9 + 64$

$(x-3)^2 + (y-8)^2 = 16$

C(3,8)

r=4

4. $9x^2 - y^2 - 18x - 6y - 9 = 0$ Hyperbola

$9x^2 - 18x - y^2 - 6y = 9$

$9(x^2 - 2x + 1) - (y^2 + 6y + 9) = 9 + 9 - 9$

$9(x-1)^2 - (y+3)^2 = 9$

$\boxed{\frac{(x-1)^2}{1} - \frac{(y+3)^2}{9} = 1}$

C(1,-3) a=1 b=3 $c=\sqrt{10}$

C(1,-3)
$F(1\pm\sqrt{10}, -3)$
V(2,-3)(0,-3)
asymptotes
$y+3 = \pm 3(x-1)$

ellipse 5. $9x^2 + 25y^2 + 36x - 150y + 36 = 0$

$9x^2 + 36x + 25y^2 - 150y = -36$

$9(x^2 + 4x + 4) + 25(y^2 - 6y + 9) = -36 + 36 + 225$

$9(x+2)^2 + 25(y-3)^2 = 225$

$\frac{(x+2)^2}{25} + \frac{(y-3)^2}{9} = 1$

C(-2,3) a=5 b=3 c=4 V(3,3) (-7,3) F(2,3)(-6,3

hyp. 6. $25y^2 - x^2 = 25$

$\frac{y^2}{1} - \frac{x^2}{25} = 1$

C(0,0)

a=1 V(0,1)(0,-1)

b=5 $F(0, \pm\sqrt{26})$

$c=\sqrt{26}$ asymptotes $y = \pm\frac{1}{5}x$

Hyperbola 7. $16x^2 - 9y^2 + 64x + 18y + 199 = 0$ *

$16x^2 + 64x - 9y^2 + 18y = -199$

$16(x^2 + 4x + 4) - 9(y^2 - 2y + 1) = -199 + 64 - 9$

$16(x+2)^2 - 9(y-1)^2 = -144$

-144

$\frac{(x+2)^2}{-9} + \frac{(y-1)^2}{16} = 1 \rightarrow \boxed{\frac{(y-1)^2}{16} - \frac{(x+2)^2}{9} = 1}$

a=4 b=3 c=5 C(-2,1) F(-2,6) F(-2,-4)

8. $x = \frac{-1}{8}(y-3)^2 + 2$ parabola opens left

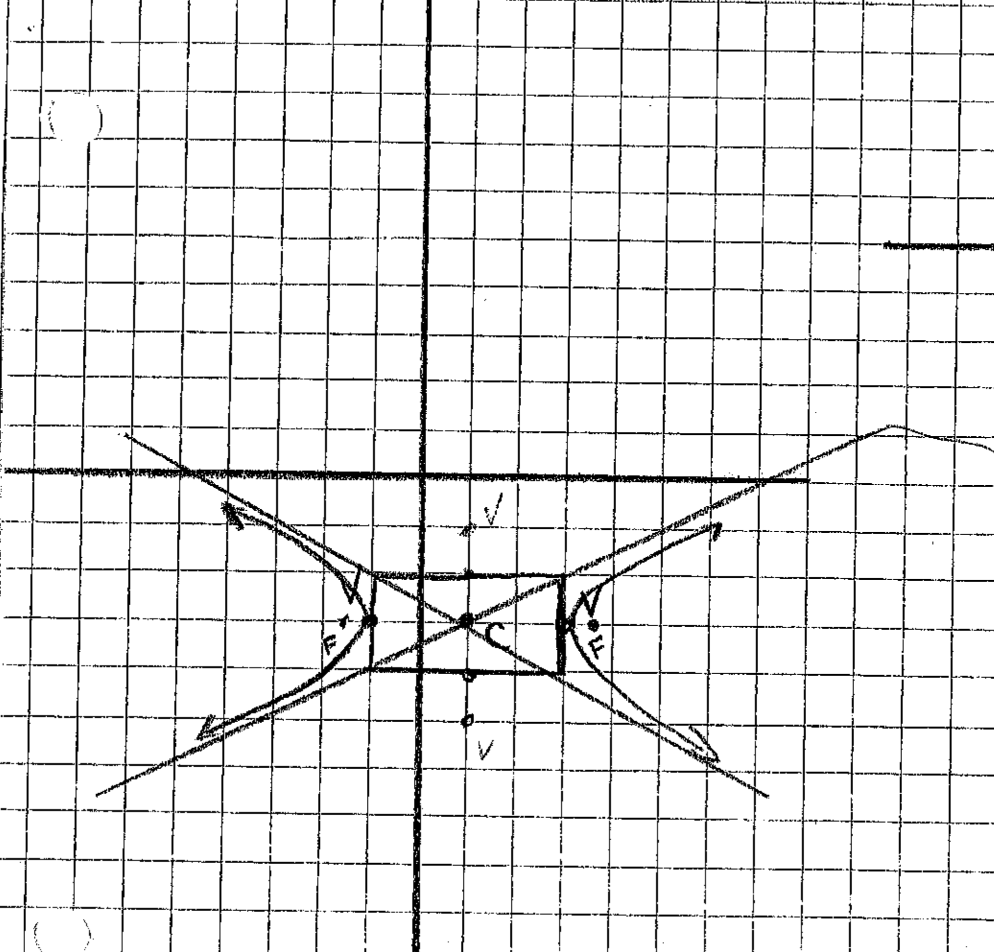
V(2,3)

$a = -\frac{1}{8}$ $\left|\frac{1}{4(-\frac{1}{8})}\right| = 2$

F(0,3) Latus Rectum = 8

D: x=4 L(0,7)
R(0,-1)

1.



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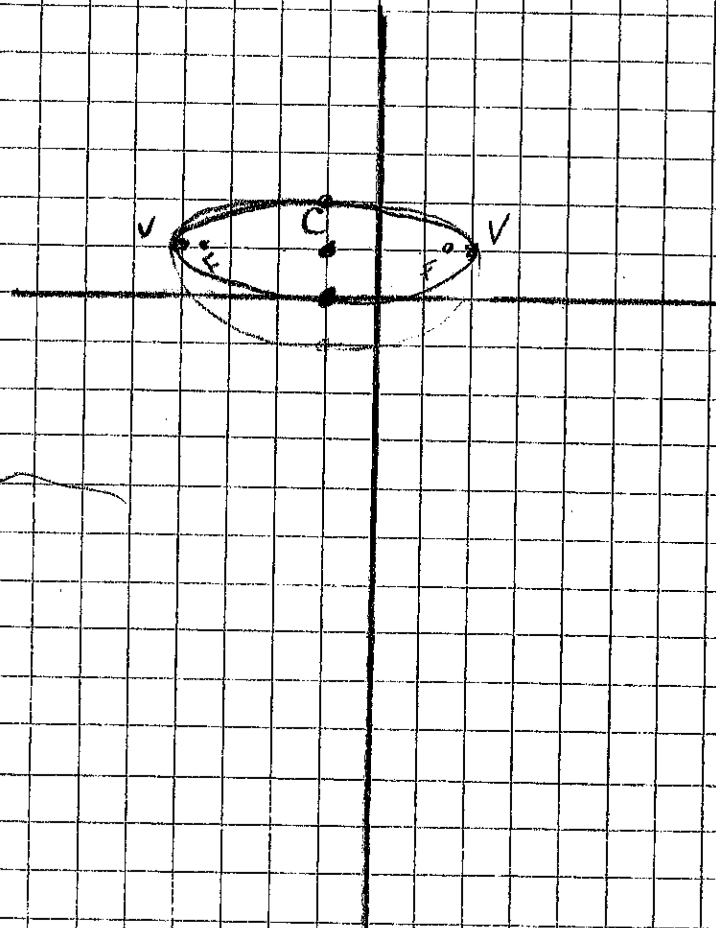

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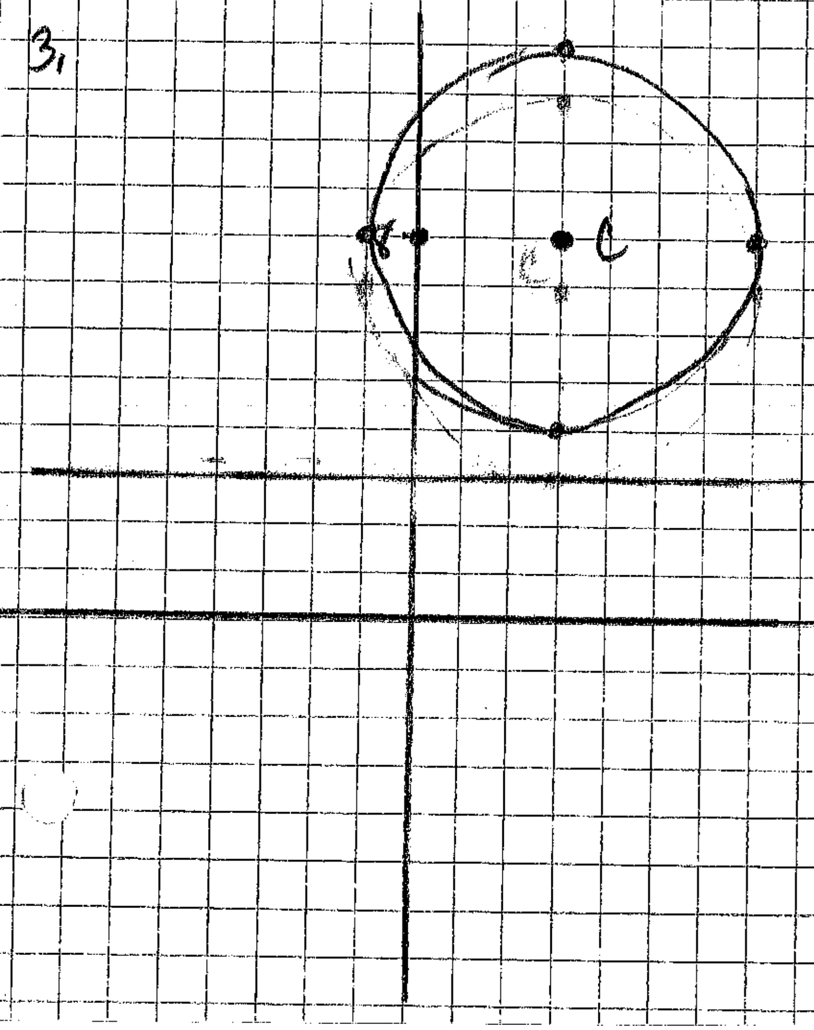

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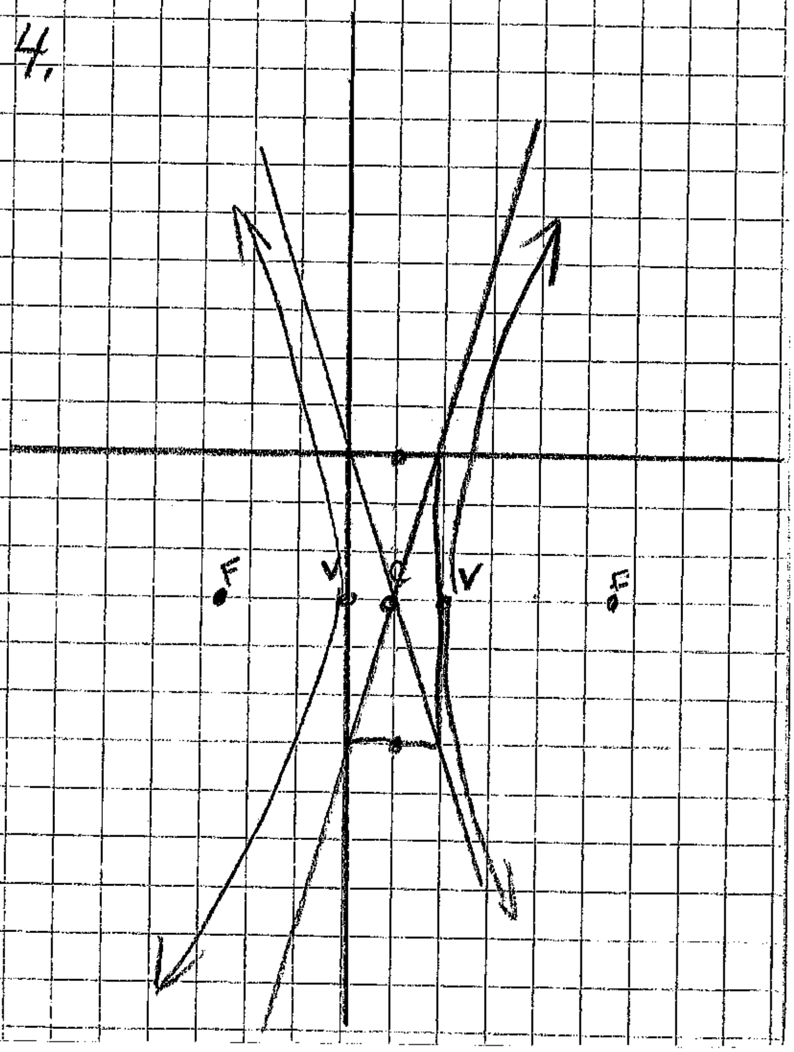

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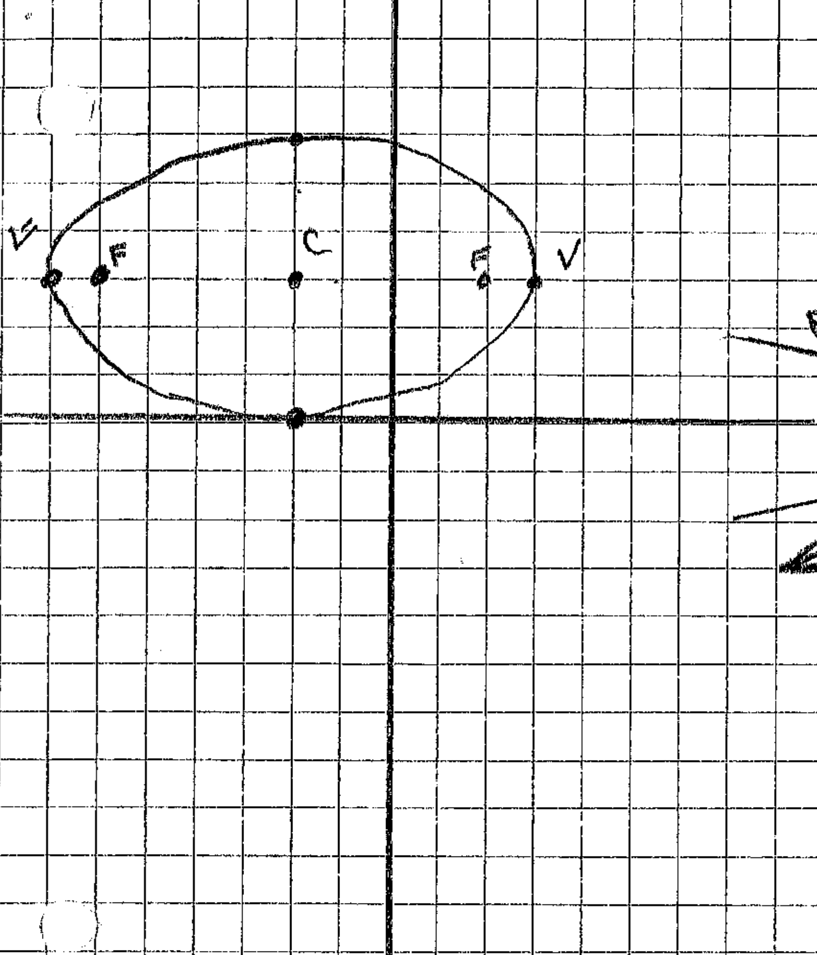

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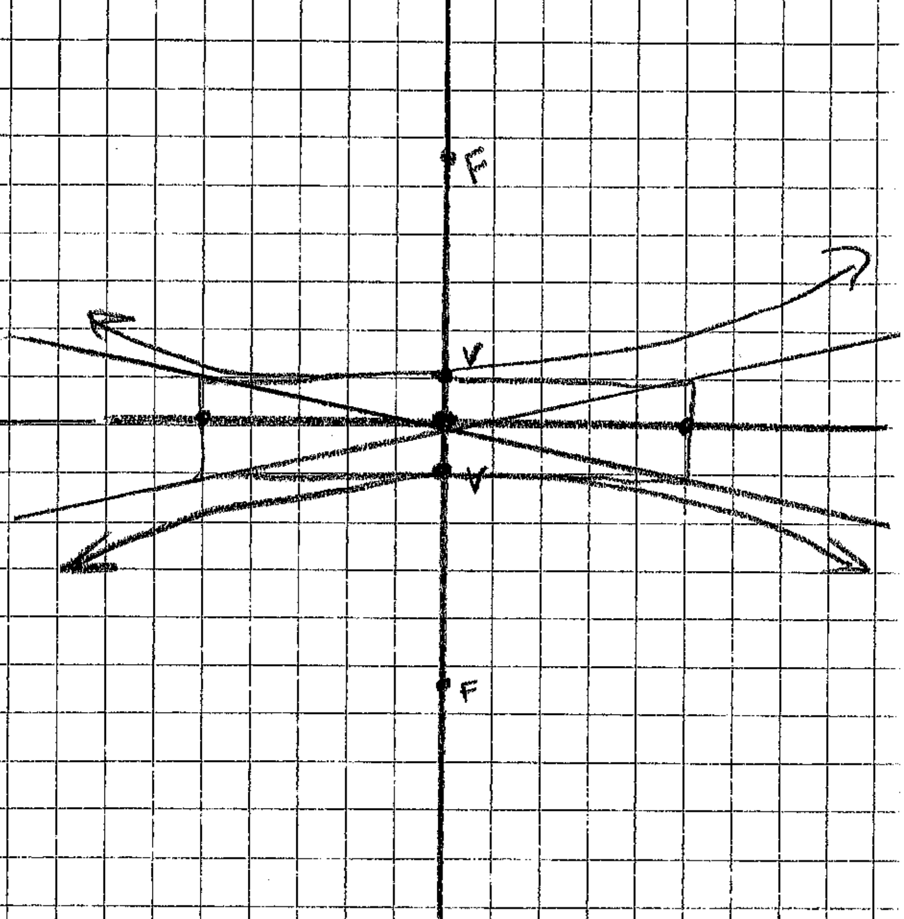

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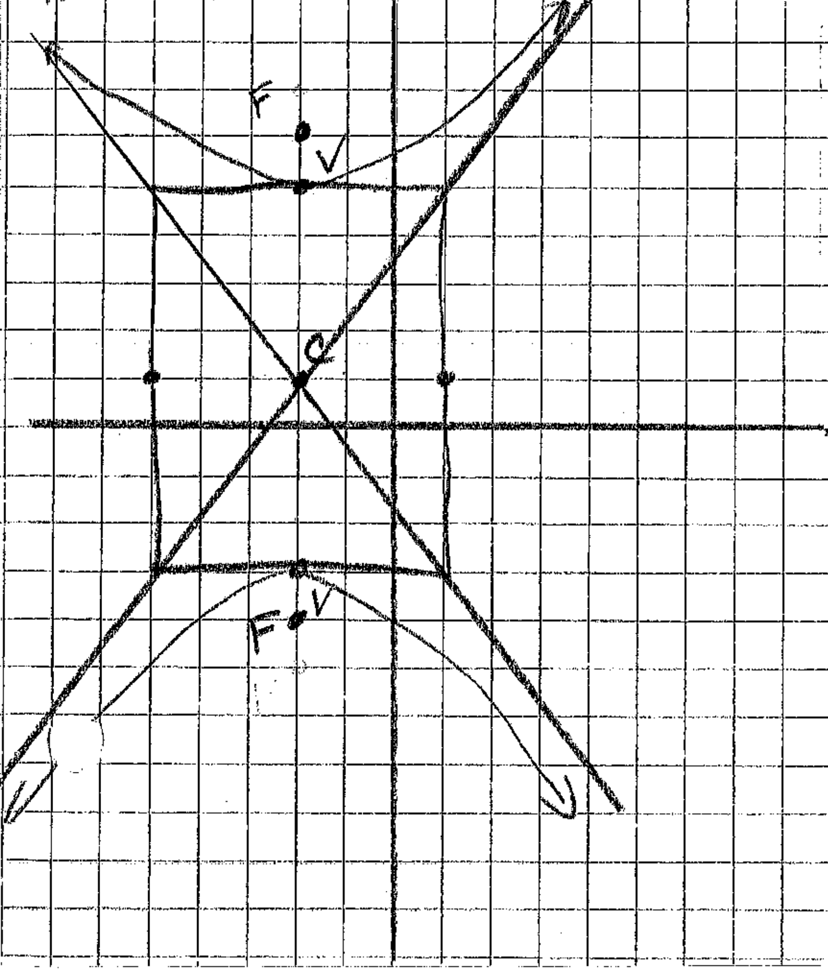

8.